IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.–10. (Canceled)

11. (**Currently Amended**) A method comprising:

dynamically processing a database to eliminate missing values in records, each record to contain a plurality of values;

preparing a statistical summary of processed data in the database;

constructing a**n alternating decision tree ("ADTree")** database structure to hold the statistical summary**, wherein the ADTree database structure provides dynamic pruning of less frequently used branches when system memory is low;**

searching through possible relationship models to find a high-scoring network; and

using the high-scoring network to compute a decision for a new case.

12. (Previously Presented) The method of claim 11, further comprising:

discretizing continuous variables in the database before preparing the plurality of statistical summaries.

13. (Previously Presented) The method of claim 11, further comprising:

modifying a relationship of the high-scoring network.

14. (Previously Presented) The method of claim 11 wherein the new case consists of values of a subset of fields of a record.

15. (Previously Presented) The method of claim 11 wherein records in the database represent bank customer transaction records, and the decision is to identify an at-risk customer of the bank.

16. (Previously Presented) The method of claim 11 wherein the statistical summary is a Bayesian model of correlations between data in records.

17. (Previously Presented) The method of claim 11 wherein the decision is one of a detection of an illegal financial transaction, a network fault diagnosis, or a prediction of a result of a pharmaceutical compound in an organism.

18. (Previously Presented) The method of claim 11, further comprising:

aggregating similar database records together; and

computing a frequency of occurrence for each of the aggregated records.

19. (Previously Presented) The method of claim 18 wherein aggregating comprises:

preparing a plurality of hashes to cluster the database records.

20. **(Cancelled)**

21. (Previously Presented) The method of claim 11 wherein the database structure comprises correlation statistics between nodes.

22. (Previously Presented) The method of claim 11, further comprising:

inferring a value of a non-observed variable based on a previous observation and the high-scoring network.

23. (Previously Presented) The method of claim 11, further comprising:

storing the high-scoring network in an eXtensible Markup Language ("XML") format.